

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>E3409 JFL</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/NO2004/000012</b>	International filing date (day/month/year) <b>20-01-2004</b>	Priority date (day/month/year) <b>20-01-2003</b>
International Patent Classification (IPC) or national classification and IPC <b>H01H 25/04</b>		
Applicant <b>Telenostra AS</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ (sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:
 

☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).  
☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:
- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

Date of submission of the demand  <b>19-08-2004</b>	Date of completion of this report  <b>24-02-2005</b>
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer  <b>Sara Thulin/MN</b> Telephone No. +46 8 782 25 00

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/NO2004/000012

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))  
☐ publication of the international application (under Rule 12.4)  
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 7 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* 1 - 4 received by this Authority on 2004-08-26

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the drawings:

pages 1 - 11 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/NO2004/000012

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	<u>1-18</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-18</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-18</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

## Documents cited in the International Search Report:

D1: EP 1182678 A1  
D2: US 6084189 A  
D3: US 6225579 B1  
D4: US 5047596  
D5: US 4103132

Document D1 discloses a switch for manual actuation of several switching elements. The actuation means includes an actuating plate being pivotably mounted in a housing on two perpendicular axes and a push-button located within a central opening of said plate (col 1 line 28-col 2 line 23).

Document D2 discloses an electrical switch. The switch includes a housing, fixed contact elements fixed with respect to the housing and movable contact elements movable with respect to the housing. An auxiliary frame within the housing has four bearing eyes offset by 90 degrees with respect to each other. An actuating member is operable with the first pivot pins and the second pivot pins for moving the about the first and second pivot axis from a neutral position to four actuating positions (col 1 line 42-line 64, figure 1).

Document D3 discloses a gimbal mounted multifunction button that has a selector button that can selectively actuate one or more micro switches in response to a biasing force. The button has a plurality of protruding actuators that pass through a plate and align with a plurality of the micro switches mounted to a printed circuit board (col 1 line 44-line 59, figure 1).

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

Documents D4 discloses multi-way change-over rotary and slide switch (col 2 line 49-col 3 line 15).

Documents D5 discloses a rotary switch including a contact bar movable between a switch-open and a switch-closed position and a rotatable circular cam member controlling the movement of said contact bar (col 2 line 5-line 42).

Document D3 is regarded as being the closest prior art to the subject matter of new independent claim 1 filed with the letter of 2004-08-26. The invention according to new claim 1 differs from what is previously known from D3 in that the switch device has an operating member which is stepwise rotatable and that the operating member is downward pressable. A person skilled in the art can not find such a solution in any of D1, D2, D4 or D5. It would require more than ordinary skill to modify the closest prior art in order to obtain the invention according to claim 1.

The invention according to independent new claim 1 is new and is considered to involve an inventive step.

The invention according to new claims 1-18, filed with the letter of 2004-08-26, is new and is considered to involve an inventive step. The invention is industrially applicable.

26-08-2004

The Swedish Patent Office  
PCT International Application

A m e n d e d P a t e n t c l a i m s

1.

A multifunctional switch device having tilt functions, intended for use in electronic equipment such as computers, handheld electronic apparatus and/or devices associated with use in means of transport such as vehicles, boats and aircraft, said equipment having or being connected to a display for function control, the switch device having a central tilting device consisting of a housing which surrounds two mutually movable, cardan coupling-supported parts, a first of the parts mounted to the housing or to a base part of the device at a first pair of supporting points, and a second of the parts supported on the first part at a second pair of supporting points which are offset 90° relative to the first pair, characterized in

- that the switch device has an operating member or element which is stepwise rotatable relative to the housing with means to detect stepwise position of the operating member,
- that the operating member is tiltable as well as downward pressable,
- that the second part of the tilting device has arms in a cross shape that are configured to actuate underlying switch contact points upon tilting of the operating element, and
- that the second part has a hole in the centre for slidably receiving a shaft located on the operating member, said member forming a rotatable, tiltable and depressible part of the switch, said shaft operative as an actuator for a centrally underlying switch contact point.

2.

A multifunctional switch device as disclosed in claim 1, characterized in

- that the housing, being in the shape of a ring, as well as said first part and said second part are fixedly attached to each other to form a one-piece unit, the supporting points being flexible and torsional for mutual cardan movement.

3.

A multifunctional switch device as disclosed in claim 1, characterized in

- that the first of the two mutually movable, cardan coupling-supported parts is mounted to a switch base at a first pair of supporting points; and that second of said parts is supported on the first part at a second pair of supporting points which are offset 90° relative to the first pair, said first and second parts forming a one-piece unit.

4.

A multifunctional switch device as disclosed in claim 1, 2 or 3 ,

characterised in

- that the mutually movable parts of the tilting device are made of a flexible material.

5 5.

A multifunctional switch device as disclosed in claim 1, 2 or 3 ,  
characterised in

- that the two mutually movable parts of the tilting device are mounted on supporting points via shafts partly rotatable therein.

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6.

A multifunctional switch device as disclosed in anyone of claims 1 -5,  
characterised in

- 15
- that a centre portion of the tilting device which forms a mount for the rotatable shaft of the operating element has a plurality of vertical faces and/ or grooves, against which at least one spring of the switch device rides in order to effect stepwise rotation of the operating element.

7.

20 A multifunctional switch device as disclosed in claim 6, characterised in

- that the stepwise rotation is detected by means of contact springs which tilt on contact with grooves in the rotary element, and form contact with and/or short circuit at associated contact points arranged on the frame of the switch device.

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8.

A multifunctional switch device as disclosed in anyone of claims 1 - 7, characterised in

- that the first part of the tilting device is fixedly attached to the second part via a second pair of supporting points, wherein the supporting points are flexible and torsional.

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9.

A multifunctional switch device as disclosed in claim 8,  
characterised in

- that the first part of the tilting device has a pair of projecting tilt pins for pivotal engagement  
35 with the first pair of supporting points.

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10.

A multifunctional switch device as disclosed in anyone of claims 1 - 9,  
characterised in

- that the first part of the tilting device has a pair of supporting points which are fixedly attached to the base and a frame, wherein the supporting points are flexible and torsional.

11.

A multifunctional switch device as disclosed in claim 6,  
characterised in

- that spring is fastened to a rotatable operating member of the switch device.

12.

A multifunctional switch as disclosed in claim 11;  
characterised in

- that the spring is of the wire type and is in the form of a clip.

13.

A multifunctional switch device as disclosed in anyone of claims 1 - 12,  
characterised in

- that the rotatable operating member which is pivotally supported in the tilting device has mounted thereon an annular slip ring for sensing against contact fields located on a frame part of the device for detection of a rotary position of the operating in relation to the base of the device.

14.

A multifunctional switch as disclosed in claim 13,  
characterised in

- that said annular slip ring has two diagonally located points for attachment to the operating member and two diagonally located pins for contacting the contact fields.

15.

A multifunctional switch device as disclosed in one or more of claims 1 - 14,  
characterised in

- that the base of the switch device has a plurality of snap discs and associated plurality of contact fields to provide for respective switch functions upon tilting or depression of the operating member; and

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- that the base has mounted thereon an outer frame internally of which is located in a ring configuration a plurality of contact fields which contact points on the slip ring touch for detection of rotary position of the operating member relative to the device base.

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16.

A multifunctional switch device as disclosed in anyone of claims 1 - 15,  
characterised in

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- that central depression of the operating member and its shaft part is designed to cause collapse of an underlying snap disc on a central contact field, whilst pressure on an outer part of the operating member or tilting of the operating member is designed to provide a movement of the tilting device which causes, through interaction with one of the arms on the tilting device, a collapse of one of the outer snap discs on an associated contact field underlying said arm.

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17.

A multifunctional switch device as disclosed in one or more of claims 1-16,  
characterised in

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- that the operating member has an outer face, or is encased by a part made having an outer face which is smooth or has contours, dimples or structures for friction against a user's finger in the peripheral area; and
- that the outer face is concave in a central part thereof and with a tactile pin or depression is arranged in the centre.

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18.

A multifunctional switch device as disclosed in anyone of claims 1 - 17,  
characterised in

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- that the operating member is centrally depressible, stepwise rotatable, as well as tiltable in four directions in order to actuate respective switch functions associated with such available movements of the switch device.